



13 October 2006

Mr. Bob Boggs
California Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

**Subject: Groundwater Field Sampling Plan, Building 649 Small Arms Firing Range,
dated 13 October 2006
Presidio of San Francisco, California**

Dear Mr. Boggs:

Enclosed please find one hard copy and one electronic copy of the *Groundwater Field Sampling Plan, Building 649 Small Arms Firing Range, Presidio of San Francisco, California*, dated 13 October 2006 and prepared by Treadwell & Rollo for the Presidio Trust (Trust). This Field Sampling Plan proposes limited groundwater sampling to confirm that there has been no release to the environment at this site.

Please contact me at (415) 561-4259 if you have any questions.

Sincerely yours,
The Presidio Trust

Craig Cooper
Remediation Program Manager

Enclosure

Cc (with enclosure):

Devender Narala, Regional Water Quality Control Board (RWQCB)
Brian Ullensvang, National Park Service (NPS)
Doug Kern, Restoration Advisory Board (RAB)
Mark Youngkin, RAB (cover letter only)
Bruce Handel, U.S. Army Corps of Engineers (USACE)

13 October 2006

Project: 2893.07

Ms. Genevieve Coyle
The Presidio Trust
1750 Lincoln Boulevard
P.O.Box 29052
San Francisco, CA 94129-0052

Subject: Groundwater Field Sampling Plan
Building 649 Small Arms Firing Range
Presidio of San Francisco, California

Dear Ms. Coyle:

Treadwell & Rollo, Inc. (T&R) has prepared this Field Sampling Plan (FSP) to outline proposed groundwater sample collection methodologies to assess whether there has been a release to groundwater following the abatement of lead impacted sand fill at the Building 649 Small Arms Firing Range (Site) at the Presidio of San Francisco, California (Figure 1). The sand fill formerly located in the Building 649 indoor small arms firing range deflection sand pit was removed between 30 January and 4 February 2006 under the Trust's maintenance program. The sand removal was documented in T&R's *Sand Pit Fill Abatement, Building 649 Small Arms Firing Range, Presidio of San Francisco, California* dated 12 May 2006 (Abatement Report). As described in the Abatement Report, based on the sand pit construction details and observations of the emptied sand pit, it appears that the lead-impacted sand was contained within the box and a release to the environment is unlikely. However, the Trust recommended limited groundwater sampling to confirm that there has been no release to the environment at the Site.

This FSP proposes collection of a groundwater grab sample from below the former sand pit. The groundwater grab sample will be analyzed for dissolved metals including the five small arms firing range (SAFR) contaminants of concern (COCs): lead, antimony, copper, barium, and zinc.

Proposed Grab Groundwater Sampling

At the completion of the sand abatement activities, access for potential future sampling was constructed prior to backfilling the sand pit concrete box with concrete. Two PVC risers were placed to create access locations where the former sand pit concrete floor or area beneath the floor could be sampled, if needed. Two photographs from the Abatement Report showing the concrete-filled box with the PVC risers is provided in Attachment 1.

The basement of the building is located below the top of the groundwater table and is prone to regular flooding. Up to two or three inches of standing water may be present across the firing range room and throughout the building basement when flooding occurs. During the sand

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abatement activities, a sand bag berm was set in place to isolate the firing range room from the remainder of the basement. The standing water in the firing range room was then pumped out to the remaining portions of the basement to allow drier conditions for the sampling. If flooded conditions are encountered during the groundwater grab sample collection event, similar pre-sampling de-watering actions will be conducted to isolate the sampling area from the remainder of the basement.

Once the firing range room is de-watered, the PVC risers will be cut flush with the concrete floor of the former sand pit. At proposed sample location 649GG101, shown of Figure 2, the concrete will be cored to allow access to the subsurface material. A hand auger will be used to advance a soil boring to approximately 1.5-foot below present grade or until substantial groundwater is encountered for sample collection. If the encountered subsurface conditions do not allow borehole advancement using a hand auger, portable direct-push sampling equipment will be mobilized to advance the borehole.

The groundwater present in the boring will not be purged prior to sample collection. The grab groundwater sample will be collected from the boring using a disposable sample bailer. Prior to collection of the grab groundwater sample, water quality parameters (temperature, pH, conductivity, and turbidity) will be monitored and recorded. The grab groundwater sample will be field-filtered using a 0.45 micron filter and collected in laboratory-supplied sample containers, sealed, labeled, and placed into an ice chest containing a sufficient volume of ice to maintain a temperature of 4 °C for transport to the off-site analytical laboratory. The sample will be documented with chain-of-custody protocols. The grab groundwater sample will be analyzed for the SAFR five dissolved metals using EPA Method 6010. In accordance with the Trust's *Quality Assurance Project Plan (QAPP)*, a duplicate grab groundwater sample will be collected and submitted for the dissolved metals analyses.

The grab groundwater sample collected from the boring will be identified as sample 649GG101. Other sample designations will include a field duplicate sample. This sample will be designated as described in the QAPP. The field duplicate sample will be identified as "DUP" plus the date (DUP100106 for a sample collected on 01 October 2006). Because disposable sampling equipment will be used during the sample collection, no equipment rinsate samples are expected. The analytical results will be validated in accordance with the QAPP.

If a temporary well point is installed in the borehole to enable the collection of groundwater grab samples, the temporary well casing will be removed from the borehole prior to backfilling with grout. The grouted borehole will have a surface completion to match the existing surface at the completion of backfill activities.

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Upon completion of sample collection activities, the actual boring location will be surveyed by a licensed land surveyor. All surveying will be conducted in accordance with the QAPP. The horizontal values will be based on North American Datum of 1927 (NAD27), California State Plane Coordinate System, Zone 3. The elevation will be referenced to the Presidio Lower Low Water Datum of 1907 (PLLW).

Soil generated through hand auguring will be placed back in the borehole and compacted prior to sealing. Upon completion of sample collection, the borehole will be backfilled with neat cement grout. Water (decontamination and purge water) generated through sampling will be temporarily stored in tanks at the Central Magazine at the Presidio.

Reporting

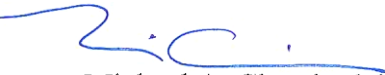
T&R will prepare a letter report describing the sampling and analytical results and recommendations for further action, if any. The results of the dissolved metals analysis will be compared to the appropriate established cleanup levels from the Trust's Cleanup Levels Document (EKI, 2002). The report will include figures, boring log, and tabular results of the analytical testing.

Schedule

Pending DTSC approval, we are prepared to perform the field work in early October 2006.

Please call us if you have any questions.

Sincerely,


Michael A. Chamberlain, PG
Senior Project Geologist

28930707.DCS




Dorinda C. Shipman, PG, C HG
Principal

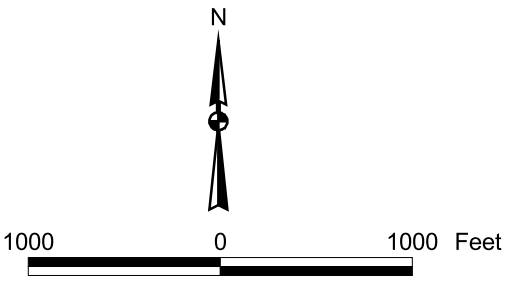
Attachments:

Figure 1 Building 649 Site Location Map

Figure 2 Proposed Groundwater Grab Sample Location

Attachment 1 Photographs of the Concrete-Filled Sand Pit with PVC Risers from the Abatement Report

FIGURES



LEGEND

- Area Depicted on Site Figure
- Area A and B boundary

Notes:
Area A Stewardship by the National Park Service.
Area B Stewardship by the Presidio Trust.



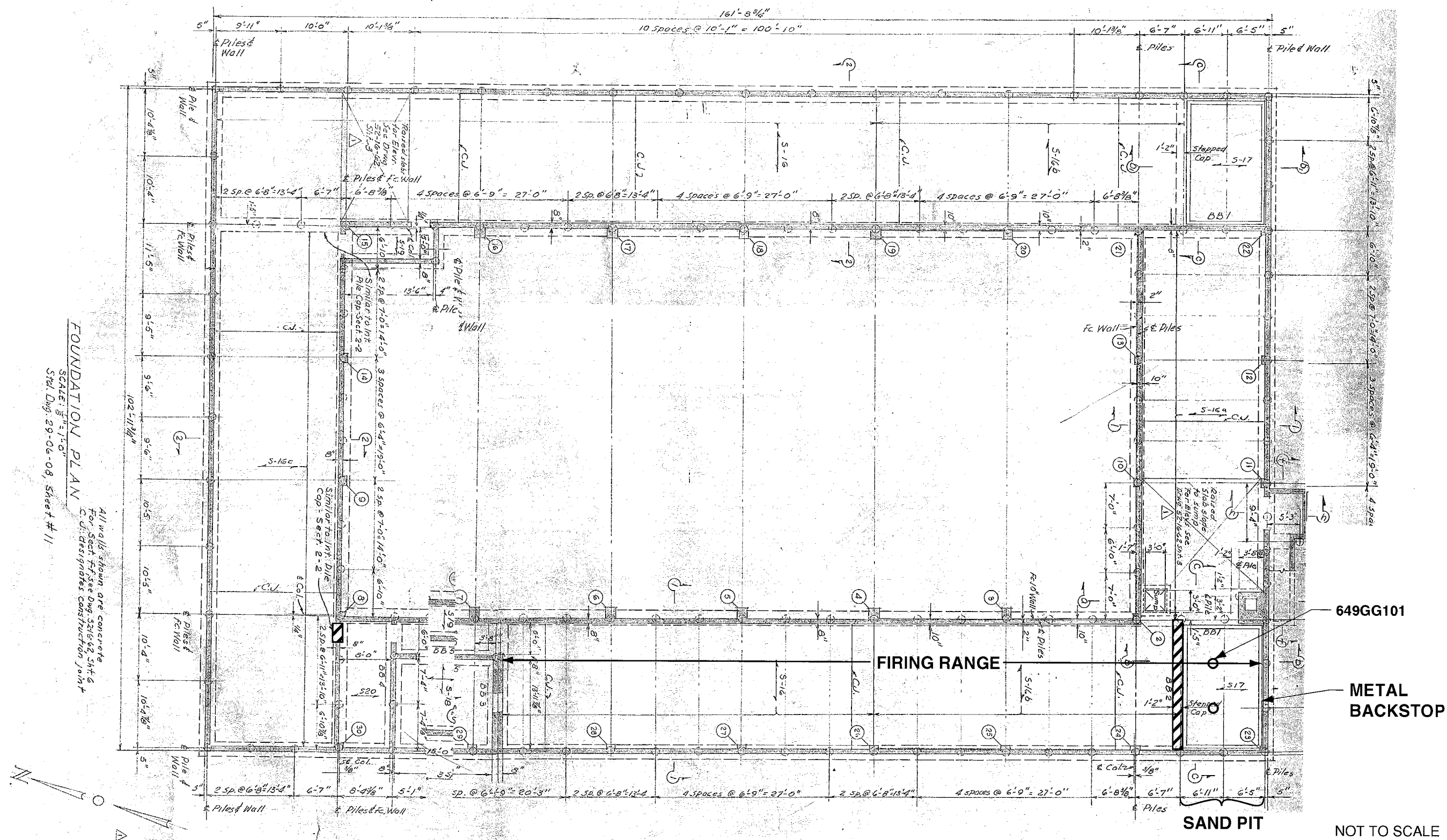
**BUILDING 649
SITE LOCATION MAP**

Treadwell&Rollo



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October 2006

FIGURE 1



EXPLANATION

Sand Bag Berm

649GG101 6-inch Diameter PVC Risers, Potential Groundwater Grab Sample Location

Source: U.S. Army "Modification of Armory - Fire Unit, Basement Plan", Sheet 5 of 12, NPS GGNRA Archives #13666, Drawer 56, Folder 2.

BUILDING 649
SMALL ARMS FIRING RANGE
 Presidio of San Francisco, California

PROPOSED GROUNDWATER GRAB SAMPLE LOCATION

Date 09/21/06 Project No. 2893.07 Figure 2

Treadwell&Rollb

ATTACHMENT 1

**Photographs of the Concrete-Filled Sand Pit
with
PVC Risers from the Abatement Report**



Photograph 1: Two, six-inch diameter PVC risers to allow for possible future sampling



Photograph 2: Sand pit filled with concrete